



Culture clash:
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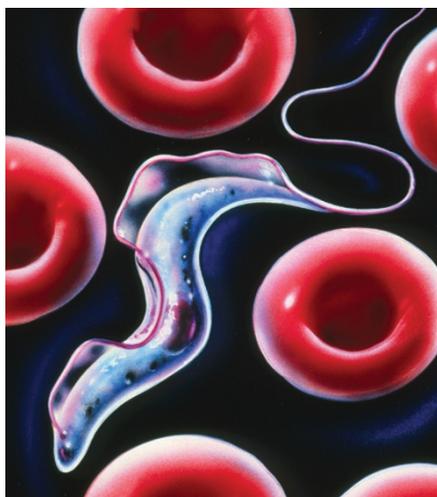
Neglected diseases see few new drugs despite upped investment

Over the past decade, neglected diseases have attracted increased attention and larger investments in research. Even often overlooked tropical diseases such as sleeping sickness and leishmaniasis have received more funding. “These Cinderella diseases, long ignored and underappreciated, are a rags-to-riches story,” said Margaret Chan, director-general of the World Health Organization, in an address last May. But these newfound ‘riches’ have given rise to just a few dozen newly approved therapies and only a handful of truly novel drugs. A new analysis by Médecins Sans Frontières (MSF) and the Drugs for Neglected Diseases Initiative (DNDi) finds that the rate of approvals for new compounds over the past decade is roughly the same as it was during the previous two-and-a-half decades, when the diseases received little attention.

“It is still a very depressing picture,” says Manica Balasegaram, head of MSF’s Access Campaign in Geneva. “This is a little bit disheartening considering the huge amount of activity that’s been happening in the global health world.”

The new analysis, presented at a symposium in New York on 13 December, shows that of the 850 new therapies and vaccines approved by the US Food and Drug Administration, the European Medicines Agency and other agencies between 2000 and 2011, 37 focused on neglected diseases, and just four of those were new chemical entities. The work builds on a pioneering paper published in 2002 by members of the Drugs for Neglected Diseases Working Group, which counted 1,393 new drug approvals—16 of which focused on neglected diseases—between 1975 and 1999 (*Lancet* 359, 2188–2194, 2002). According to DNDi, 11 of those 16 drugs could be considered new chemical entities. The numbers suggest that although the rate of approvals for drugs for neglected diseases has gone up, the rate of approvals for new chemical entities seems to have remained relatively flat.

Direct comparisons, however, are difficult, as the new analysis is more comprehensive than the previous one, and tallying drug approvals can prove challenging. Joshua Cohen, a health economist with the Tufts Center for the Study of Drug Development in Boston, reanalyzed



No rest: Sleeping sickness parasite pervades.

the working group’s data a few years ago and came up with a different count—32 new drugs approved for neglected diseases, including 13 new chemical entities (*PLoS ONE* 5, e10610, 2010).

The low number of new compounds concerns Nathalie Strub-Wourgaft, medical director at DNDi in Geneva and a co-author on the new analysis. Reformulations and combination therapies can be useful, but new drugs are crucial, she says. “We need to have new compounds that will have zero risk against drug resistance.” However, Cohen notes that some of the best products approved in recent years have been combination products or already existing drugs approved for new indications. “I’d rather have the focus be better uses of already existing products than development of something completely new. New isn’t a panacea,” he told *Nature Medicine* in an email.

Product development problems

The reason for the low number of approvals isn’t entirely clear, but one problem could be a lack of funding for product development once a discovery is made. “Governments, because of the financial crisis, are starting to move back to funding basic research rather than product development,” says Mary Moran, head of the Sydney-based global health nonprofit Policy Cures. In December, Moran and her colleagues

released a five-year review of the annual G-FINDER survey, which collates global data on product development funding. The review shows that although overall funding is holding relatively steady, public funders, which provide two-thirds of neglected disease research dollars, invested \$124 million more in basic research for neglected diseases in 2011 than they did in 2007. But product-development partnerships, which are designed to get neglected-disease drugs to market, saw a decrease in funding from a peak of \$580 million in 2008 to about \$450 million in 2011, a drop of more than 20%.

Peter Hotez, dean of the National School of Tropical Medicine at Baylor College of Medicine in Houston, points out that drug development can take a decade or more. Investments in global health research have only recently grown, he says, “so it will take a few years before we see an increase in approvals.” Mel Spigelman, president of the New York-headquartered TB Alliance, agrees. “Timelines in drug development are long, so we are just now starting to see the fruit of early investments,” he says.

As *Nature Medicine* went to press, experts in the field were anticipating the approval of two novel tuberculosis drugs, bedaquiline and delamanid, in the US and Europe, respectively. “While investment in some of these disease areas has increased in the last decade, TB [tuberculosis] and other neglected diseases are still massively underfunded relative to their global health impact,” Spigelman says.

The new MSF analysis finds that although neglected diseases account for roughly 11% of the world’s global disease burden, in the last decade these illnesses garnered only 4% of the world’s new therapies and 1.2% of new chemical entities. If new drugs were distributed on the basis of disease burden, neglected diseases would have received 89 new products instead of 37, says Strub-Wourgaft. But the future may look a little brighter. The new analysis estimates that, given the current pipeline, an average of 4 or 5 new products could be approved each year for neglected diseases through 2018. “There have been encouraging signs compared to the last report,” Balasegaram says, but “we’re still far behind where we want to be.”

Cassandra Willyard